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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,701	10/20/2003	Yoshikazu Nagamura	57454-983	2833
20277	7590	03/21/2005	EXAMINER	
MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			KORNAKOV, MICHAIL	
			ART UNIT	PAPER NUMBER

1746

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/687,701

Applicant(s)

NAGAMURA ET AL.

Examiner

Michael Komakov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 15 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/504,728.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/20/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-7 and 15 and cancellation of claims 8-14 in the reply filed on 02/23/2005 are acknowledged. Claims 1-7 and 15 are pending and examined on the merits.

Drawings

2. The drawing, Fig.2, is objected to as failing to comply with 37 CFR 1.84(p)(5) because it includes the following reference character(s) 301 and 302 not mentioned in the description. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1, 2, 3, 5 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10 and 11 of U.S. Patent No. 6,277,205 in view of JP11-29794.

Claims 10 of US'205 discloses a method of cleaning a photomask, comprising:

- cleaning a surface of photomask to decompose organic objects present thereon and to remove metallic impurities;
- removing foreign objects attached to the surface of said photomask with cathodic water (which is referred by US'205 to water having hydrogen dissolved therein (col.7, lines 34-36)); and
- drying said photomask.

Claims 11 of US'205 discloses the method of cleaning a photomask according to claim 10, wherein said cathodic water to be used in the step of removing foreign objects attached to the surface of said photomask contains ammonia.

Claims 10 and 11 of US'205 do not specifically indicate that the concentration of ammonia is not more than 1%. JP'794 teaches cleaning precision parts and components utilized in the manufacturing of semiconductor devices by treating the component with ammonia containing hydrogen water, prepared by dissolving hydrogen in 700 ml of water mixed with 3.5 ml of diluted aqueous ammonia, thus making the concentration of ammonia in hydrogen dissolved water less than 1% (reads on "not more than 1%", as instantly claimed). JP'794 also states that the amount of added ammonia affects the adequate cleaning and the excess of ammonia may require too much time and ingredients to neutralize the waste fluid produced by hydrogen/ammonia cleaning, thus indicating that the amount of ammonia in hydrogen water is result effective parameter, which affects the efficiency of cleaning procedure (0005, 0007, 0009). Therefore, one skilled in the art motivated by JP'794 would have found obvious to use hydrogen water with ammonia content as per JP'794 in order to efficiently clean photomask in the method of US'205 with the reasonable expectation of success. Furthermore, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

Specification

5. Claims 2, 3 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 2 recites "said H₂ gas dissolved water is alkalized". Claim 2 depends on claim 1, which

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recites "said H₂ gas dissolved water contains ammonia...". Therefore, the solution of H₂ gas dissolved water containing ammonia as per claim 1 is already alkalized and the content of claim 2 is redundant to claim 1. Claim 3 recites "said H₂ gas dissolved water is alkalized with ammonia", which is also redundant to parent claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claim 4 contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 4 recites "said H₂ gas dissolved water is alkalized with KOH). However, claim 4 depends on claim 2, which depends on claim 1, which recites that "said H₂ gas dissolved water contains ammonia". Therefore, based on the recitation of claim 4, H₂ gas dissolved water containing ammonia of claim 1 should also contain KOH. However, the instant specification discloses, that "a chemical solution rendered slightly alkaline by adding a small amount of electrolyte such as KOH **in place of**

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aqueous ammonia was employed." (page 11, lines 20-25). The instant disclosure does not provide for the use of ammonia and KOH in the same hydrogen water solution.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-3, 5-7, 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Nagamura et al (U.S. 6,277,205).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Applicants attention is also drawn to MPEP 201.03 [R-2], which provides the guidance for correction of Inventorship in an Application, stating that "Where the name

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of an inventor is to be deleted, applicant can file a continuing application with a request for deletion of the name of the inventor. The continuing application may be filed under 37 CFR 1.53(b)".

Nagamura discloses a method of cleaning a photomask, such as a phase shift photomask comprising MoSiON film. The cleaning method of Nagamura includes: cleaning a surface of photomask to decompose organic objects present thereon and to remove metallic impurities; removing foreign objects attached to the surface of said photomask with cathodic water, which is referred by US'205 to water having hydrogen dissolved therein (col.7, lines 34-36, wherein the content of ammonia is not more than 1%; drying said photomask (See abstract, Fig.3, col.3, lines 55-66; col.4, lines 1-4, 43-47; col.7, lines 36-36; col. 8, lines 4-5; col.15, lines 13-19; claims 10, 11).

With regard to claims 5 and 6 Nagamura teaches that in a method of cleaning a photomask at least **one of said steps** involves ultrasonic treatment as well (col. 4, lines 12-15).

With specific regard to claim 7 Nagamura teaches that the use of cathodic water comprising a slight amount of ammonia incorporated therein makes it possible to provide a marked improvement in the percent removal of foreign particulate objects from the surface of a photomask (col. 9, lines 10-15). FIG. 6 illustrates the percent removal of particulate alumina from MoSiON film having particulate alumina attached thereto.

Therefore all the limitations of the instant claims 1-3, 5-7 and 15 are expressly met by Nagamura.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-3, 5-7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeol et al (U.S. 6,039,815).

Yeol discloses a cleaning method employed for removing contaminants adhering

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to surfaces of substrates and the like during manufacturing semiconductors (col.1, lines 5-10). Yeol specifically indicates removing organic substances and metallic contaminants from the surfaces, while applying the first aqueous cleaning solution, having oxidizing effect and being acidic; and removing particulate matter from the surfaces, while applying the second aqueous cleaning solution (ii) because of its reducing property and alkalinity (col.11, lines 13-22). Two types of aqueous cleaning solutions may be used with respect to the subject to be cleaned (col.11, lines 64-67). Yeol also indicates drying of substrates (col.9, line 61). With regard to second cleaning solution Yeol teaches the use of hydrogen water, prepared by mixing 2 mmol/l of ammonia water and a hydrogen water at mixing ratio 1liter to 1 liter, thus providing the cleaning solution, wherein the concentration of ammonia reads on "not more than 1%", as per the instant claim 1.

Regarding claims 5 and 6, the cleaning efficacy in Yeol can be improved by combining the above methods on either step with ultrasonic-waves (col.3, lines 49-51).

While teaching a cleaning method for removing contaminants from surfaces of substrates and the like during manufacturing semiconductors, Yeol does not specifically indicate cleaning of photomasks, and particularly photomask formed with MoSiON film.

However, because Yeol provides effective cleaning of surfaces of **different** substrates, utilized in semiconductor processing, and indicates that a plurality of types of contaminants can be removed from such surfaces (col.2, lines 43-49) by treating them with cleaning solutions, identical to those instantly claimed, one skilled in the art motivated by the teaching of Yeol would have found obvious to apply cleaning

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technique of Yeol in order to clean photomasks masks, and particularly photomask formed with MoSiON film with the reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

03/16/2005